

### REMARKS

The Examiner is thanked for the performance of a thorough search. By this response, no claims have been amended.

### DRAWINGS

Enclosed are corrected drawings for FIG. 1 through FIG. 17. The drawings were corrected according to suggestions of the Draftperson's Review.

Each issue raised in the Office Action mailed September 3, 2003 is addressed hereinafter. It is respectfully submitted that the rejection of the Claims are over come for reasons given hereafter.

### SUMMARY OF REJECTIONS/OBJECTIONS

In the Office Action, Claims 1, 3, 5, 6, 15-17, 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by "InfoSleuth: Agent-Based Semantic Integration of Information in Open and Dynamic Environments" by *Bayardo* et al.

Claims 2, 14 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over "InfoSleuth: Agent-Based Semantic Integration of Information in Open and Dynamic Environments" by *Bayardo* et al. in view of "Information Brokering in an Agent Architecture" by *Martin* et al.

Claims 7-10, 18-21 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over "InfoSleuth: Agent-Based Semantic Integration of Information in Open

and Dynamic Environments" by Bayardo et al.

CLAIMS 1, 2-10

Independent Claim 1 is reproduced below:

- "1. A computer-implemented method for communication and cooperative task completion between a community of distributed electronic agents communicating using a dynamically expandable interagent communication language ("ICL") and at least one other distributed component system, the other distributed component system communicating using a protocol incompatible with the ICL, the method comprising the acts of:
- a) receiving by a bridge agent a description of functional capabilities of components of the other distributed component system from a **component registry of the other distributed component system**;
  - b) **translating the functional capabilities** of components received in step (a) **from the protocol of the other distributed component system into the ICL**, to create a translated description;
  - c) adding to a facilitator registry of the community of distributed agents the translated description, wherein the facilitator registry is distinct from the component registry;
  - d) responsive to a request for service to the community of distributed agents, delegating an ICL sub-goal request to the bridge agent;
  - e) translating at the bridge agent the delegated ICL sub-goal request into the incompatible protocol of the other distributed system, to create a translated request; and
  - f) invoking one or more components of the other distributed component system using the translated request."

Applicants' Claim 1 requires a component registry that is distinct from a facilitator registry. Claim 1 distinguishes between **component registry** and the **facilitator registry**. The component registry contains the description of the functional capabilities of the "**other distributed component system**." Thus, this component registry is associated with the "other distributed component system" and is maintained by the "other distributed component system". Such a component registry is distinct from the facilitator registry.

For purposes of explanation, assume that we have a community of distributed electronic agents ("Community F"). Assume that facilitator agent belongs to Community F. Community F maintains its own registry called the Facilitator registry. Assume that there is one "other distributed component system" (called "Community G"). Assume that Community G uses a protocol that is incompatible with the protocol of Community F. **Community G maintains its own registry called the component registry.**

In contrast, in *Bayardo*, only a SINGLE registry is disclosed. On the other hand, Applicant's amended claim 1 requires a component registry that is distinct from a facilitator registry. Thus, Applicants' Claim 1 requires at least TWO registries.

In order to underscore the differences between *Bayardo* and Applicants' claimed invention, the Examiner's mapping scheme, as indicated by the Office Action, is used. The mapping used by the Examiner is summarized in the following table:

Application 09/271,617	<i>Bayardo</i>
OAA Facilitator	Broker Agent
Bridge Agent	Resource Agent
Agents of the "Other Distributed Component System" (i.e. agents of Community G)	Resource Agents

Contrary to the mapping scheme as indicated by the Office action, a resource agent, in *Bayardo*, is merely one of the agents that advertises its capabilities in the SINGLE registry disclosed in *Bayardo*. For example, on page 196, left hand column, lines 12-21 describe the "agent technology " disclosed in *Bayardo*. It describes its agent

technology as including specialized agents that represent the users, the **information resources**... (emphasis added, page 196, left hand column, lines 12-14). Thus, it can be seen that a resource agent in *Bayardo* is merely one of the agents, namely, **an agent that represents information resources**.

FIG. 1, as shown on page 196 of *Bayardo*, is illustrative of an architecture with only one registry, namely the RMI registry. All agents, including the resource agents that represent a resource such as a database, advertise with the RMI registry. It is to be noted that a resource such as a database shown in FIG. 1 of *Bayardo*, is NOT the equivalent of Applicants' "**other distributed component system**." The database shown in FIG. 1 and FIG. 2 (see page 200 for FIG. 2), is an object that stores data. FIG. 2 in *Bayardo* shows an Oracle database. In other words, the database in *Bayardo*, such as an Oracle database, is an information repository. The Oracle database has no separate and distinct broker agent, and has no separate and distinct registry where another set of agents can advertise their capabilities. Rather, the Oracle database comprises a set of tables where data is stored and where SQL statements are used to retrieve the data from the tables. Thus, *Bayardo* discloses a method for information retrieval rather than fulfillment of a service request.

To further explain, Claim 1 requires "**functional capabilities**" rather than mere interchange of data, i.e., data retrieval as in *Bayardo*. The "**functional capabilities**" of Applicants' claim 1 refer to what functions the components in the community can perform. In contrast, *Bayardo* discloses "[t]he purpose of the Resource agent is to make information contained in an information source (e.g., database) available for retrieval and

update (see *Bayardo*, page 199, right-hand column, sub-section "3.4 Resource Agent"). The retrieval of data and/or updating of data is not the same as **functional capabilities**. For example, "**Being able to make coffee**" is a functional capability. Getting information on the available quantity of coffee, or the flavor of coffee is mere information retrieval. Thus, the database in *Bayardo* cannot make coffee but it can store information about coffee.

Claims 2-10, either directly or indirectly, depend from Claim 1 and include all the limitations of Claim 1. Therefore, Claims 2-10 are allowable for at least the reasons provided herein with respect to Claim 1. Furthermore, it is respectfully submitted that Claims 2-10 recite additional features that independently render Claims 2-10 patentable over *Bayardo* and *Martin*, either taken alone or in combination.

CLAIMS 39, 14-21 and 40, 25-28, 41

Independent Claims 39 and 40 contains limitations similar to those of Claim 1.

Claim 39, as amended, is reproduced in part below:

"a) receiving by a bridge agent a description of functional capabilities of components of the other distributed component system from a **component registry**;  
b) translating the functional capabilities of components received in step (a) from the protocol of the other distributed computing system into the ICL, to create a translated description;  
c) adding to a **facilitator registry** of the community of distributed agents the translated description, **wherein the facilitator registry is distinct from the component registry**;"

Claim 40 as amended is reproduced in part below:

a plurality of electronic agents capable of communicating in the ICL, at least one of the agents being a bridge agent capable of translating between the ICL and the protocol understood by the other distributed component system, and

further capable of translating a description of functional capabilities of components of the other distributed component system registered in a **component registry**; and

a facilitator capable of receiving from the bridge agent, in the ICL format, the translated description of functional capabilities of the components of the other distributed component system and registering the translated description of the functional capabilities in a **facilitator registry**, the facilitator further capable of receiving a service request in the ICL and in response to the service request, determining a sub-goal request necessary to accomplish the service request, and delegating the sub-goal request, in the ICL, to the bridge agent based upon a match between the sub-goal request and the functional capabilities registered in the facilitator registry, wherein the bridge agent will translate the ICL request into the protocol of the other distributed component system to invoke at least one of the components of the other distributed component system and **wherein the component registry is distinct from the facilitator registry**.

Therefore, Claims 39 and 40 are allowable for at least the reasons provided herein with respect to Claim 1. Claims 14-21, either directly or indirectly, depend from Claim 39 and include all the limitations of Claim 39, and therefore are allowable for at least the reasons provided herein with respect to Claim 39. Furthermore, it is respectfully submitted that Claims 14-21 recite additional features that independently render Claims 14-21, and 23 patentable over *Bayardo*, either taken alone or in combination with *Martin*.

Claim 25-28, and 41, either directly or indirectly, depend from Claim 40 and include all the limitations of Claim 40, and therefore are allowable for at least the reasons provided herein with respect to Claim 40.

Furthermore, it is respectfully submitted that Claims 25-28, and 41 recite additional features that independently render Claims 25-28, and 41 patentable over *Bayardo* and *Martin*, either taken alone or in combination.

CONCLUSION


For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is encouraged to call the undersigned at (650) 838-4311.

The Commissioner is authorized to charge any fees due to Applicants' Deposit Account No. 50-2207.

Respectfully submitted,  
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